



B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL/MAY 2011

MECHANICAL ENGINEERING BRANCH

FIFTH SEMESTER - (REGULATION 2004)

**ME 372 – HYDRAULICS AND PNEUMATICS**

Time: 3 hr

Max. Mark: 100

**PART- A (10X2 = 20 Mark)**

1. List four essential properties desired for fluid power systems.
2. What are the drawbacks of pneumatic power systems?
3. What do you mean pressure compensated pump?
4. Draw the symbol of intensifier.
5. Which type of accumulator suits for high frequency operation?
6. What is meant by regenerative in hydraulic circuits?
7. Why is there a need for muffler in pneumatic system?
8. What is the difference between moving part logic and fluidic devices?
9. What is the advantage of PLC over microprocessor controlled circuits?
10. What happens to the pneumatic system when filter becomes filled with contaminants?

**PART- B (5 X16 = 80 Mark)**

11. Brief on the following:
  - (i) Methods of determining viscosity of hydraulic oil (8)
  - (ii) Determination of moisture content of air (8)
12. (a) (i) Describe the working principle of variable displacement pressure compensated Vane Pump. (9)
  - (ii) Brief on constructional features in compound pressure relief valve (7)(OR)
  - (b)(i) Explain the applications of accumulators with suitable examples. (12)
  - (ii) Give expression for mechanical, hydraulic and overall efficiency of hydraulic pump (4)
13. (a) (i) Brief on the closed circuit reversible direction hydrostatic transmission. (10)
  - (ii) Stress the need of industrial safety features in design of hydraulic systems with suitable examples (6)(OR)
  - (b) (i) Punching operation involved use of high force for shorter duration in sheet metal

forming. Design a hydraulic system to perform the punching operation with use of two pumps, one having high pressure and low discharge and other having low pressure and high discharge (10)

(ii) Draw an electro-hydraulic circuit for regenerative cylinder (6)

14. (a)(i) Design a circuit for pneumatic cylinder with adjustable deceleration cushion at both end (8)

(ii) Explain application of SR-FLIP FLOP with an example. (8)

(OR)

(b) Discuss on the FRL unit.

15. (a) (i) Design a pneumatic system involving two-cylinders to achieve sequence of  $A^+B^+A^-B^-$  using cascade method.

(OR)

(b) Brief on maintenance of hydraulic and pneumatic systems.